

V.—*New Chilopoda and Diplopoda from the East Indian Region.* By RALPH V. CHAMBERLIN, Museum of Comparative Zoology, Cambridge, Mass., U.S.A.

THE new Chilopods and Diplopods described in this paper were found in the course of the identification of several lots of specimens from the East Indies, making part of the collections of the Museum of Comparative Zoology.

CHILOPODA.

SCOLOPENDROMORPHA.

Cryptopidæ.

Cryptops brunneus, sp. n.

With two sulci crossing the head longitudinally, these diverging more strongly near middle of length. The head is shorter and broader than in *sulciceps*, and does not so nearly cover the cervical sulcus of the first tergite. More widely separated from that species in having longitudinal sulci on the first tergite; these extending forward and joining the cervical sulcus, not converging. From other species having the first tergite of this character it differs in having all the spiracles large and longitudinally elliptic. Prosternal margin convex on each side; marginal setæ 5+5. Ventral plates with a bowed transverse sulcus crossed by a much weaker longitudinal sulcus, which is often vague near the transverse one. Last ventral plate moderately narrowed caudad; caudal margin straight or slightly convex; corners rounded. Coxopleuræ caudally truncate; pores larger than in *sulciceps*, but similarly removed by a wide space from dorsal plate and also from caudal margin; without spines, bearing only finer setæ. Hairs of legs much finer than in *sulciceps*. Colour, in general, brown, the head lighter, ferruginous.

Length 16.5 mm.

Locality.—Philippines: Luzon, Mt. Makiling (*C. F. Baker*).

Type, Mus. Comp. Zool. (No. 2000).

Otostigmidæ.

Otocryptops melanostomus valens, var. n.

Close to *O. melanostomus*, but differing in having metatarsal and tarsal spines on the twentieth legs and a tarsal

spine on the twenty-first; in the different position and greater proportionate length of the ventral spine of the femur of the anal legs, the spine equalling the distance of its base from the proximal end of the joint and about half the distance to the distal end; and in the form of the cephalic plate, which is proportionately broader and which has the caudal margin mesally straight instead of convexly rounded. Head and first tergite chestnut, the remaining portion of dorsum browner, with the caudal border of each plate crossed by a dusky stripe.

Length 35 mm.

Locality.—Philippines: Luzon, Mt. Makiling (*C. F. Baker*).

Type, Mus. Comp. Zool. (No. 2011).

Otostigmus philippinus, sp. n.

Antennæ composed of seventeen articles, of which the first two are very sparsely hairy, the others more densely and finely so, the third nearly to base. Tergites margined from tenth caudad; paired sulci present on tergites from the fifth caudad. Prosternal dental plates each with three distinct teeth. Sulci of sternites in middle and posterior region reaching to near middle of plate; plates of posterior region conspicuously uneven and roughened with short ridges, swellings, and granules. Last ventral plate narrowed caudad; caudal margin widely incurved. Coxopleural processes with two (or but one) distal points, armed laterally with three spines and dorsally with one. Only first four pairs of legs with two tarsal spines; others with two to the twentieth inclusive. Femur of anal legs ventrally with three spines toward outer side, three to six toward inner, two stouter ones on mesal surface and one at distal end above. Colour above, in general, olive-brown, plates clearer green along caudal and lateral edges; legs fulvous, the posterior pairs darker, brown or olive-brown; antennæ dark olive.

Length 33 mm.

Locality.—Philippines: Mt. Makiling (*C. F. Baker*).

Type, Mus. Comp. Zool. (No. 1993).

Otostigmus bakeri, sp. n.

This species lies in the small group in which the anal legs are wholly unarmed. It is, among these, apparently most like the Colombian *O. burgeri*, Attems. Antennæ consisting

of twenty articles. Tergites margined, beginning first distinctly on the eighth plate; sulci beginning on segment 5. A weak median keel set off by furrows and two lateral ones on each side on most plates. Prosternum with each dental plate bearing six or seven teeth, the outermost ones smaller in size than the others. Sulci distinct across anterior borders of sternites. Last ventral plate strongly narrowed caudad; caudal margin deeply incurved; plate with a deep longitudinal sulcus on each side, and a much weaker median one. Coxopleural processes at tip with two spinous points and laterally with three, none dorsally. Legs from first to nineteenth inclusive with two tarsal spines; the twentieth with one. Anal legs with femur smooth, wholly unarmed; a scar indicates the probable presence of a tarsal spine. Dorsum greenish brown; head and first tergite somewhat ferruginous caudally and antennæ also lighter, somewhat fulvo-ferruginous beyond the base. Venter brown. Legs greenish.

Length 39 mm.

Locality.—Philippines: Mt. Makiling (C. F. Baker).

Type, Mus. Comp. Zool. (No. 1992).

Scolopendridæ.

Asanada sinaitica, sp. n.

Similar in general to *A. brevicornis*, Meinert, the genotype. The paired dorsal sulci begin as complete lines on the fourth tergite instead of on the sixth, traces of sulci occurring on the third tergite both across the anterior and the posterior border. The female type, as compared with a typical female of *brevicornis*, has the head broader in proportion to the length, and anteriorly is more triangularly narrowed, less rounded, than in the latter. The last tergite is more markedly widened caudad from base, and the caudal end is more produced, with the median angle less obtuse. The anal legs are more slender than in the female *brevicornis*, the tarsal joints in particular being proportionately longer, with the first much exceeding the second instead of being essentially equal to it in length; the claw is conspicuously different, being much shorter, less than half the length of the second tarsal article instead of as long or nearly as long as it, with an even dorsal curve instead of a curve convex proximally, and then flat or concave proximad of tip (more as in female *brevicornis*), with serrations not extending so far toward base.

Length 25 mm.

Locality.—Palestine: Sinai (W. Sharbeh, April 2, 1914).

Type, Mus. Coll. Zool. (No. 1937).

Asanada philippina, sp. n.

This species is readily separable from the other two by differences in the anal legs. The claws of the anal legs in the male are long and exceed the second tarsal joint in length. The anal legs are strongly enlarged nearly as in *brevicornis*; the femur and metatarsus are not furrowed above, while the tibia is marked with a deep longitudinal furrow, deepest distally, but not extending over the proximal portion. Dorsum brown; head darker, of a bluish or slightly purplish tinge, the anal legs similar; other legs fulvous. Antennæ short, reaching to end of or a little beyond first tergite. Prosternal teeth 4+4, the end ones on each side small. Tenth tergite with paired sulci complete, ninth with sulci complete, excepting for a short interruption a little distance from caudal end, on others not reaching the caudal margin, though on seventh, eighth, and ninth not falling far short, on sixth and fifth extending to near middle, on third and fourth still shorter, and on second present only as short traces at anterior border. Sternites with two complete sulci. Last plate with caudal margin straight along middle, corners well rounded, a distinct median sulcus which does not cross the caudal border.

Length 31 mm.

Locality.—Philippines: Mt. Makiling.

Type, Mus. Comp. Zool. (No. 1995); paratype (No. 1996).

LITHOBIOMORPHA.

Henicopidæ.

Lamyctes cairensis, sp. n.

While the type of this species is in poor condition it seems to present characters sufficient for its diagnosis, inasmuch as it stands apart with *L. sinuata* (Porat), likewise an African species, in having a tibial spur on thirteenth (or thirteenth and fourteenth) legs as well as on the more anterior ones. It differs decidedly from *sinuata*, however, in the character of the posterior tergites, these being caudally only moderately incurved and with caudal corners rounded, with no suggestion of processes. The surface of the

posterior tergites only moderately a little granular, not densely granular as in *sinuata*. Prosternal teeth 3+3. Antennæ with distal ends broken off, but twenty-eight articles are left on one side, so that twenty-nine or more articles are normally present. Thirteenth tarsi biarticulate. (Fourteenth and fifteenth legs missing in type.)

Length 8 mm.

Locality.—Cairo.

Type, Mus. Comp. Zool. (No. 1984).

SCUTIGEROMORPHA.

Scutigeridæ.

Parascutigera philippina, sp. n.

Agreeing in general with the genus as represented by *P. dahl*i, Verhoeff, of the Bismarek Archipelago. Antennæ with articles of first flagellum fewer, only one hundred and eighteen. (Right antenna, the left not showing a division between first and second divisions.) Legs also similarly comparatively short, though apparently longer than in *dahl*i. Tarsus of first leg with ten articles; of the second, nine; of the third, eight; of the fourth, twelve; of the fifth, seven; of the twelfth, seven, the second division having twenty-nine articles. Second division of other legs with twenty-three to thirty articles. Spine on ventral side of femur at distal end much exceeding the diameter of the joint. Spine on caudal side of coxa long. Spiracles very short, on oblique caudal border, the tergites but little elevated about them. Dorsum fulvous of green tinge, with three longitudinal dark green stripes, of which the lateral one is paler than the median and may be more or less geminate. The median dark stripe extending also upon the head, each side of which the latter is fulvo-ferruginous. Antennæ ferruginous. Legs, in general, greenish, narrowly annulate with ferruginous.

Length about 12 mm. (male type).

Locality.—Philippines: Mt. Makiling (*C. F. Baker*).

Type, Mus. Comp. Zool. (No. 1998).

A female from the same locality (Mus. Comp. Zool., No. 1999), seems to agree fully in coloration and other features, so far as may be judged (all legs but one of the seventh being absent), excepting that the first division of the antennæ embraces only about eighty-eight articles. The branches of the gonopods diverge caudad. It may represent another species, but is too fragmentary for satisfactory determination.

DIPLOPODA.

ONISCOMORPHA.

Glomeridæ.

ZYGETHOMERIS, gen. nov.

Resembling *Rhopalomeris*, Verhoeff, based upon Wood's species *bicolor* from the Malayan peninsula, in the peculiar sixth article of the antenna, which is greatly enlarged, somewhat curved, and obviously compressed from side to side. Unlike *Rhopalomeris*, however, the seventh article is less flattened and obliquely extended against the sixth, being clearly set off and possessing only four well-separated sensory cones instead of numerous ones. The body is strongly pigmented.

Genotype, *Z. lamprus*, sp. n.

Zygethomeris lamprus, sp. n.

Differing from *Glomeris concolor*, Pocock, also from Borneo, strikingly in coloration. In the present species the dorsum is deep chocolate-brown, with the keels and caudal borders flavous. Head flavous below, also in a narrow transverse stripe across vertex, below which is an A-shaped pattern extending to the antennæ. Venter and legs fulvous.

Head with transverse ridge above well marked. Antennæ short; the sixth article much longest and stoutest, clavately widening distad with dorsal surface concave and ventral convex, strongly flattened from side to side; third article second in length; seventh article short, attached by an oblique base, with four (or on one side five) sensory cones. Ocelli on each side seven in a single row.

Collum crossed in front by two distinct transverse sulci. Second tergite behind front margin with nine or ten much finer transverse sulci on each side, most of these continuing also across the mid-dorsal region.

The anal tergite of the male as viewed from above is convex from side to side; in caudal view the edge is nearly horizontal, being only very slightly obtusely emarginate or indented after the middle.

In the male the seventeenth and eighteenth pairs of legs are much reduced, the eighteenth exceeding the seventeenth, though not greatly so; first joint on mesal side with an acute vertical process, and on outer side giving rise to a thin plate, against the anterior face of which the leg lies. The

ninteenth or copulatory legs are stout and unicate; second joint bearing a long, curved, digitiform process with a seta at tip; third joint with a similar, but much shorter process at distal end on mesal side and with a longer and stouter, distally broad and blunt, prolongation from the disto-caudal surface; fourth joint with a conical process curving from the distal end of the caudal surface mesad, its apex approximate to that of the mesal process of the third joint; last joint flattened ectomesally, curved, narrowing distad to a point.

Length 18 or 19 mm.; width 8 mm.

Locality.—Borneo: Sarawak, Ladang (*H. W. Smith*).

Type, Mus. Comp. Zool. (No. 4687).

Sphærotheridæ.

TROCHOSOMA, gen. nov.

In this genus the vulva resembles that of *Australiosoma* in having the basal piece divided into two distinct plates; but of these the mesal one is much the longer, extending along the mesal side of the apical piece which it surpasses. The distal piece of the vulva is low and broad, with its line of junction with the proximal pieces very oblique. The anterior gonopods of the male with the immovable finger much shorter, rounded, uniaarticulate and the movable finger biarticulate, its first joint short and provided with a short rounded process or spur simulating a minor immovable finger. In the posterior gonopods both fingers are uniaarticulate, equal in length, curving together and typically overlapping at the tip. In the legs there is a stout spine above and remote from the claw. Antennæ very short, composed of six articles of which the last is a little enlarged in the male, but not at all in the female; sensory cones numerous.

Genotype, *T. pelloceps*, sp. n.

Trochosoma pelloceps, sp. n.

At present, after long preservation, the types are brown or somewhat testaceous above, with the anal plate and some of the more anterior ones in particular dusky; each plate along its caudal border of a deeper, nearly blackish colour. Head, antennæ, and collum deeper in colour than the other parts.

Antennæ very short, flattened. In the female thickest at base, with the first article stoutest and of about the same

length as the sixth, these two much longer than the intermediate ones. In the male the antennæ are also attenuated from the base distad, but the last article is somewhat thickened and moderately clavate, proportionately stouter than in the female. Head smooth and shining, the punctæ few and widely scattered above, more numerous in clypeal region.

Collum with anterior margin strongly arcuate, each half strongly concave, and the two curving forward and meeting at an angle at the middle. The caudal margin between the lateral angles semicircular. Surface smooth, not punctate.

Second tergite strongly margined in front laterally, the elevated border narrow in middle above and widening down each side as usual, then again narrower laterally. Plates depressed strongly within the border below and at the sides in front, but not dorsally. Surface not punctate, shining. Other tergite also smooth and shining, not punctate.

Anal plate smooth and shining, under magnification showing very fine punctations. Above lower or caudal margin a weak depression or obscure furrow.

In the vulva the suture between the halves of proximal division runs obliquely from the caudal end ectocephalad, the outer piece lying almost transversely. Distal margin of these pieces taken together a little concave, very oblique, the mesal piece extending distad much beyond the outer and beyond the distal piece as well. The latter is low, but broadly extended over the ectocephalic surfaces of the two basal pieces.

In the posterior gonopods of the male the two fingers are concave on their adaxial sides, convex on the abaxial, curving together and crossing at the tips; each finger serrate or dentate along the adaxial edge for the entire length.

Length (male) about 22 mm.; width 9.2 mm.

Locality.—South India: Periakulum (*Mrs. D. C. Scudder*, May 1863).

Type. Mus. Comp. Zool. (No. 4694); paratype (No. 4695).

HELIGMASOMA, gen. nov.

Resembling *Cyliosoma*, a genus apparently confined to Australia and adjacent islands. From that genus differing in having the apical as well as the proximal division of the vulva of the female longitudinally divided into two pieces. So far as the published descriptions and the species I have examined give evidence, the antennæ of *Cyliosoma* are each

terminated by four sensory cones, while in the present genus the sensory cones are numerous. Articles of antennæ six instead of seven.

Genotype, *H. errans*, sp. n.

Heligmasoma errans, sp. n.

Because of long preservation the original colour of the type-specimens is doubtful. They appear to have been dark, perhaps of an olivaceous tinge with the caudal margins of tergites ferruginous.

The head above is smooth and without punctæ, excepting a few laterally. In going toward the labrum, however, the punctæ become deeper and much more numerous. Antennæ short, not stout, last joint slightly clavately wideued distad, with numerous small sensory cones.

The collum with anterior margin curving forward and fitting into the superior depression of the head. Posterior margin curving in an even semicircle between the apices of the lateral angles. A fine margining sulcus along anterior border curving forward at the middle, though not so strongly so as the margin of the plate. Surface of the plate smooth and shining, or the punctæ obscure, few, and scattered.

Anterior elevated border of the second plate thick laterally, narrower in the middle region, as is that of lateral along lateral margin. The furrow behind it deep, widening laterally, its surface smooth and shining; border limiting furrow behind smooth, set off by a vague furrow. General surface of plate densely and deeply punctate. Other tergites also densely punctate.

Anal scutum densely punctate, the surface also uneven or roughened. Lower or caudal border distinctly margined, the narrow elevated border smooth.

Both the basal and the apical divisions of vulva longitudinally subdivided. Mesal basal piece narrower, but much longer than the ectal, extending distad along the apical division and attaining or nearly attaining the level of the tip of the latter. Apical division proportionately small, subconical, the two halves scarcely differing in size.

In the anterior gonopods of the male the two fingers are one-jointed. The movable finger is broadly conical, distally rounded, concave on the side toward the other branch. The latter is much shorter than the other, toward which it is a little curved; it is broad and distally rounded, and lies close to the other finger. The movable finger of the posterior gonopods is of the general form usual in *Cyliosoma*,

much stouter than the immovable branch, distally excavated on the axial side as usual, with one of the edges here weakly toothed. The immovable finger equal to the other in length, flattened on axial surface, a little twisted, narrowing moderately distad, the distal end rounded.

Length (male) about 38 mm. ; width 20 mm.

Locality.—Unknown.

Type, Mus. Comp. Zool. (No. 4692) ; paratype (No. 4693).

Zoospherium amittum, sp. n.

This species appears to conform to the genus *Zoospherium* of Madagascar, and is probably from that locality. Through long preservation the colour has been lost, leaving the specimen throughout testaceous, excepting the eyes, which are dark olive.

The head is sparsely lightly punctate. Antennæ slender, the last article cylindrical, bearing numerous sensory cones.

Collum of form described for *Spheropeus magnus*, but with the lateral angles broader, less acute, and not curved so decidedly forwards; the plate is longer, making the caudal margin more convex. There are several irregular series of shallow punctæ in front, but the remaining part of plate free from them.

Second tergite with lateral wings large; the margination as usual, the depressed lateral border much and abruptly below level of other part of plate. The surface is very densely deeply punctate, but the punctæ are not coarse. In the succeeding plates the lower ends are narrowed to an acute angle, the anterior surface being obliquely bevelled to form a shelf over which the preceding plate fits; the surface densely uniformly punctate, like that of the second tergite.

Anal scutum with surface like that of the preceding ones. Weakly margined below, the border smooth and the margining furrow shallow.

Tarsus of legs with a single stout spine above the claw. The latter long and slender.

Vulva composed of three pieces, two larger ones separated by the pore with a suture running obliquely proximomesad from it; each of these pieces prolonged in a horn or process partly embracing the unpaired piece, which is distoectal in position and is distally deeply and acutely incised.

Length (female) about 40 mm. ; width 23 mm.

Locality.—Uncertain, but probably Madagascar ("Wyman coll.").

Type, Mus. Comp. Zool. (No. 4709).

Castanotherium obscurum, sp. n.

This species seems much to resemble *C. carinatum*, Poc., described from Mt. Kina Balu in Northern Borneo, but seeming to differ in the copulatory organs, structure of the second tergite, etc., and in the larger size and different coloration.

The colour is dark brown to fuscous, with the keels testaceous, the light colour extending less than halfway to the mid-dorsum. Anal tergite bordered entirely across with the same light colour. Antennæ, legs, and ventral surface, in general, fulvous.

The head densely deeply punctate, the punctæ setigerous: concave above at the middle.

The collum has the anterior face subvertical, the lower edge at middle curving ventrad to fit the concavity of the head. Finely transversely ridged across anterior border of the dorsal surface, depressed caudad of the ridge, with the surface densely deeply punctate.

The second tergite with anterior margin elevated, a strong transverse ridge caudad of the anterior border, but much farther^e forward than in *carinatum*, and a second obscure ridge a little further caudad; surface deeply punctate. All following plates punctate, sulcate, or striate; scabrous in front; caudal margin with a dense fringe of caudally directed short hairs.

Anal scutum closely punctate; in front finely granular and scabrous.

Legs with a single spine above the claw.

In the posterior gonopods the two fingers are equal in length. The proximal part of the movable finger is notably thicker than represented by Pocock for *carinata*. In the anterior gonopods the immovable finger, in comparison with the other, is much shorter and more abruptly bent distally toward the latter.

In the vulva of the female the distal piece is longer disto-proximally than in *carinatum*, and the piece as a whole proportionately larger as well as being differently shaped.

Length of male about 32 mm.; width 15 mm., as against 11.5 mm. in *carinatum*.

Locality.—Borneo: Sarawak, Ladong (*H. W. Smith*).

Type, Mus. Comp. Zool. (No. 4688); paratypes (No. 4689).

Castanotherium leium, sp. n.

Dull brown above, the keels ferruginous except marginally.

Head and collum deep fuscous or blackish olive. Antennæ and legs, except proximally, bright green.

Head rather weakly and not densely punctate, the setæ moderately long. Concave above as usual. Antennæ short, the last article strongly thickened and with numerous sensory cones in the usual manner.

Collum of the typical general form. The transverse ridge much slighter than in the preceding species, with surface caudad of it scarcely depressed. Punctæ rather sparse and weak.

Second plate strongly margined laterally and anteriorly; a conspicuous wide furrow along the elevated border, the ridge caudad and mesad of this furrow low, not rising above the level of the middle region of the plate, from which separated, however, by a weak depression or furrow. Surface appearing smooth, the punctæ obscure. In the other tergites the anterior part of the plate is sparsely scabrous, and the free posterior portion nearly smooth, a little punctate and coriariouly marked anteriorly, but at most very weakly coriariouly marked posteriorly.

Anal tergite with caudal margin not at all incised or emarginate at middle. Surface with numerous weak punctæ and also obscurely marked with impressed lines, vaguely subcoriariouly.

Legs with a single spine above the claw.

Each piece of the vulva of the female as a whole subconical in outline, flattened antero-posteriorly as usual, the outer margin convex, the mesal one nearly straight. Apical piece usually large; its median length nearly equal to that of the basal piece, extending down outside the latter to its base.

Length (female) 34 mm.; width 17.5 mm.

Locality.—Philippines: Luzon, Mt. Makiling (*C. F. Baker*).

Type, Mus. Comp. Zool. (No. 4690).

The only diagnosis of Pocock's *C. hirsutellum* from Paragua (Palawan) available to me is so brief that I cannot be wholly certain of its relation to the present species. That author's *C. porosum*, also described from the Philippines, is widely different. In view of the fact that it lacks the characteristic enlargement of the last antennal article, the latter being simply cylindrical and bearing only four sensory cones instead of numerous ones, it should be separated generically, and may be known as *Castanotheroides porosus* (Pocock).

Sphæropæus magnus, sp. n.

The general colour above is light chocolate-brown, with the anterior, normally covered, portion of each tergite black, the second tergite, which is wholly free, showing a dense black colour over the anterior two-thirds of its length. Collum also blackish. Coxæ of legs brown, the other joints green.

Head above smooth and shining, not punctate; below punctate, puncta not deep; a shallow depression on each side below. Median emargination of labral border wide; the tooth broad, extending to lower end of emargination, black. Last article of antennæ strongly clavately thickened, distally truncate, with numerous sensory cones.

Collum with anterior margin gently bowed forward convexly at middle, concave on each side. Lateral angle on each side rather narrow, curving forwards. Caudal margin between angles convex, the median portion of the curve flattened; surface smooth and shining, not at all punctate, obscurely coriariouly marked. Plate margined in front, the border set off by a fine sulcus, narrow laterally, thicker at the middle.

The second tergite of usual general form and proportionate size; anteriorly broadly excavated to receive the collum; margined in front of the lateral wings and again narrowing below; the plate rounding evenly down to the margining sulcus, showing no distinct furrow in the median region, but with a moderately wide and deep one evident on the wings; surface smooth and shining, not at all punctate, under the lens showing coriariouly markings. The surface of the following plates similarly smooth and shining, not at all granular anteriorly.

Anal scutum broadly depressed some distance above the lower margin, so that the lower border all the way around flares out moderately. Above the lower margin a distinct fine sulcus. Surface smooth and shining, coriariouly lines as on the other plates. Tarsus with a single stout spine above the claw.

Anterior gonopods of the male with the immovable finger triangular, flattened, the pointed tip strongly chitinous and bent toward the other finger. Movable finger much exceeding the other, biarticulate, the distal joint shorter and narrower, the proximal joint at the distal end on ectocaudal side with a short rounded spur or eminence. The posterior gonopods distally much resembling the claw of a lobster, the

immovable finger being large and heavy, the movable one equalling it in length, but more slender and biarticulate, the distal article very short, continuing evenly the lines of the basal segment.

Length of male about 45 mm. ; width 24 mm.

Locality.—Borneo : Sarawak, Ladong (*H. W. Smith*).

Type, Mus. Comp. Zool. (No. 4708).

SPIROSTREPTOIDEA.

Harpagophoridæ.

Thyropygus complexus, sp. n.

Median plate of anterior gonopods low at middle, triangular. Basal piece of anterior gonopods clavately widening distad, produced at distomesal angle into a long acute prong. Posterior gonopod from the upper end of the gonocœl curving ectad, then proximad and again mesad ; the expanded apical part curving forward against the mesal side of the base of the anterior gonopod ; just as it reaches the upper open end of the gonocœl, the gonopod gives rise to a long subcylindrical process, which curves over against and crosses the distal prong of the anterior gonopod on its caudo-ectal side ; at the ectodorsal part of its curvature the gonopod presents a process in the form of an elevated plate or keel ; at the base of the expanded apical region there arises on the ventral side a long, acute, black-tipped prong which parallels the edge of the plate, a much shorter black spur occupying a corresponding position on the opposite or dorsal edge ; the expanded end at its dorso-mesal corner bears about ten long slender spines.

General colour black, the overlapped region of the prozonites paler, testaceous, often of an olive cast. Labral and lateral borders of head ferruginous. Legs and antennæ pale ferruginous, with the first two articles darker, brownish.

Head smooth ; a sulcus present across vertex. Eyes nearly once and a half their long diameter apart ; inner end angular ; ocelli in six series—*e. g.*, 13, 11, 10, 7, 7, 4. Antennæ short, reaching caudal edge of collum.

Collum strongly narrowed down the side, but a distinct lateral convex margin evident, this joining the anterior margin about the rounded antero-ventral corner ; caudo-ventral corner rectangular or a little more acute. Very strongly margined below and up the front side to level of eyes.

On other segments the transverse suture clearly marked throughout; suture widely moderately curving opposite the well removed pore. Metazonites smooth above, with the usual striations above and below. The prozonites above with a network of chiefly transversely placed impressed lines.

Cauda of anal scutum much exceeding the valves, slightly upcurved at the tip (male). Valves with mesal borders strongly elevated and compressed.

Stigma pits triangular, with angle forwards.

Fourth and fifth joints of legs of male with the usual cushions.

Number of segments (male) eighty-seven.

Length (male) about 210 mm.; width 10·7 mm.

Locality.—Borneo: Sarawak, Poak, near Kuching (*H. W. Smith*).

Type, Mus. Comp. Zool. (No. 4806).

Thyropygus amphelictus, sp. n.

The median plate of the gonopods in the form of a transverse band expanded into the usual triangular process at the middle, the distal margin each side of the triangle doubly curved, the end of the bar a little expanded.

The outer lamina of the anterior gonopods only about half as long as the inner; the latter narrowed distad, the distal fourth a thinner, distally rounded plate with a slight angle at base on ectal side, but without spur or process. The posterior gonopod emerges at level of upper end of outer lamina of anterior gonopods, from there curving caudomesad and then cephalad, so that the greatly expanded terminal lamina is brought against the base of the inner plate of the anterior gonopod; from its mesal side below level of emergence arises a long spine or prong, which lies in a continuation of the gonocœl in the inner plate of anterior gonopod; it gives rise also to two prongs a little proximad of the expanded end region of which the ectal is shorter, stouter, distally black, and but little curved, while the mesal is slender, curves first mesad and then cephalo-ectad; the terminal plate bears about six spines at its antero-mesal angle.

The colour is shining black, with a very narrow stripe of dull red along the caudal margins of the metazonites; the covered part of prozonites testaceous, of green cast. Collum with narrow reddish border both in front and behind. Head black above, the frontal and lower region with antennæ brown, of somewhat ferruginous cast. Legs

fulvous, with proximal joints browner. Anal scutum with cauda red, basal region black; valves black, excepting elevated inner borders, which are red.

Vertigial sulcus distinct. Antennæ reaching to caudal edge of second segment. Eyes more than their diameter apart; ocelli in six series—*e. g.*, 13, 12, 10, 8, 6, 4 (5). Head behind transverse sulci at edge of collum with deep, close, longitudinal furrows or rugæ, elsewhere smooth.

Collum with lower margin nearly straight; antero-lateral angle rounded; caudal margin concave just above lower corner on each side. Strongly margined below and in front. Two deep longitudinal sulci a little above lower margining furrow from caudal margin part way forward to anterior margin.

The segmental sulci very deep, widely curving opposite the pores. Metazonites with longitudinal striae below, and up the side nearly to pore, strongly marked. Prozonites wholly smooth throughout.

Cauda exceeding valves; a little upcurled at the tip; a deep sulcus setting off the caudal region from the basal. Valves strongly margined.

Number of segments fifty-six to sixty.

Diameter (male) 10 mm.; length about 135 mm.

Locality.—Java: Buitenzorg (*T. Barbour*).

Type, Mus. Comp. Zool. (No. 4812); paratypes (No. 4813).

The female much resembles *T. javanicus* (Brandt), though differing in details; but the male is very different in the form of the gonopods.

GONOPLECTUS, gen nov.

This genus is referred to the Harpagophoridae, with which it agrees in general, though the characteristic series of stout setæ on the distal plate of the posterior gonopods was not detected in the long preserved and dried type-specimen. The gonocœl is open laterally, the posterior gonopods curving ectad and then proximad. Anterior median plate somewhat inversely T-shaped, lying over the bases of the middle pieces of the anterior gonopods; the latter in contact along their mesal edges, strongly clavately widening distad as in *Leiotelus*. Outer piece of anterior gonopod exposed at base, but bending strongly mesad and mostly concealed behind the inner plate. Posterior gonopod giving rise at level of exit on anterior face to a stout, distally pointed, long blade that curves proximo-mesad about the

anterior gonopod, the distal end lying at the mesal line in the genotype; twisted, the end expanded into a plate that lies caudad of the outer border of the anterior gonopod.

Repugnatorial pores beginning on the sixth segment nearly in line with the sutures, but the latter curving well away from them.

Prozonites with numerous transverse striations, excepting caudal portion, which is roughened with punctæ and chiefly longitudinal impressed lines. Metazonites below with deep longitudinal striæ, smooth above.

Ventral plates smooth. Pits of spiracles short, less than twice as long as wide, exceeding the lateral end of the ventral plates, but much less so than in *Thyropygus*.

Fourth and fifth joints of legs in males with pads.

Cauda cylindrical, pointed, upcurled. Anal valves with borders strongly elevated.

Genotype, *G. carltoni*, sp. n.

Gonoplectus carletoni, sp. n.

At present the prozonites are testaceous, with a dark irregularly edged stripe on each side extending from the lower part of the side dorsad beyond the pore to a point half-way between the latter and the mid-dorsal line. The metazonites brown. Legs brownish, distally dusky to nearly black.

Antennæ reaching to near the end of the third segment. Vertex of head caudad of the transverse suture, strongly longitudinally ribbed. Median sulcus fine. Head mostly smooth; punctate in clypeal and labral region. Labral setigerous foveolate 3+2. Teeth in labral sinus three, these rounded.

Collum strongly narrowed down the side, margined below and in front up to the level of the eye, the thickened border especially broad at the anterior corner. Above the lower margining sulcus two parallel sulci from caudal border forward, and in front behind the anterior margining sulcus many oblique and irregular striations.

Anterior median plate of gonopods with median or distal arm broader than the lateral; sides convex, converging distad to a narrowly rounded apex. The inner piece of the anterior gonopods strongly clavate to about distal third, the latter triangular. At outer edge of base of this triangular part arises a short, distally blunt, flat process that curves ecto-caudad. The posterior gonopod from point of origin of the long, mesally curving spur runs directly proximad, flexing weakly sigmoidally and expanding into a plane; at end

concave caudally, extended mesad, and with a flat process from its base running caudad and dividing the cavity.

Number of segments near sixty.

Width (male) 6.2 mm.

Locality.—Northern India (*Rev. M. M. Carleton*).

Type, Mus. Comp. Zool. (No. 4858); paratype (No. 4858).

Odontopygidæ.

LEIOTELINÆ, subfam. nov.

Differing from the previously known Odontopygidæ, heretofore known as exclusively Ethiopian, in having the tibial process of the posterior gonopods a broad and thin plate, not at all distally pointed. In posterior gonopods no spiral turn between coxa and femur, no femoral spine, and no constriction between femoral and tibial divisions. Ventral plate of anterior gonopods well developed, but fused proximally with part of the gonopods, over which it lies.

Labral sinus with three teeth. Mentum with large depression sharply limited behind.

Metazonites with caudal margin smooth. Anal valves unarmed. Spiracles small, not extending beyond the lateral ends of sternites.

Fourth and fifth joints of most legs of male with prominent cushions.

LEIOTELUS, gen. nov.

Posterior gonopods running mesad and then curving out ectad and again distad, widening to tibia; tibial process and tarsus broad, thin, expanded plates approximating at their distal edges; tarsus or larger mesal plate with a short straight spur from caudal edge.

Collum laterally narrow, with lower end freely projecting, lower on each side; lower anterior and lateral borders strongly margined.

Repugnatorial pores beginning on sixth segment. Prozonites with numerous transverse striations. Metazonites smooth.

Genotype, *L. amballæ*, sp. n.

Leiotelus amballæ, sp. n.

The median plate of the anterior gonopods inversely T-shaped, lying against anterior face of coxæ of anterior gonopods and below apex and at ends of arms fused with

these, the distal end free, triangular. Coxal plate of anterior gonopods in anterior view widening strongly, clavately distad; distal edge oblique, incised a little mesad of ectal angle; the meso-distal angle a little prolonged, acute, tip a little curved; from caudal surface below distal end arises a strongly curved distally acute process, which bears a blunt spur or lobe on caudal side near middle of length. Telopodite much shorter, broadest at base, which is curved mesad, the other part lying against outer edge of and behind outer border of coxa. Posterior gonopod emerges near middle of length of anterior coxa, which at this level bears a thick distally concave lobe, in the hollow of which rests the emerging posterior gonopod.

The general colour of prozonites dark olive, the metazonites dark brown or somewhat ferruginous, the cauda and the elevated margins of anal valves the same. Antennae and legs yellow-brown or somewhat pale ferruginous.

Transverse sulcus across vertex very sharp; the longitudinal vertigial sulcus much finer, deeper at its lower end, which is on a level with the mesal angles of the eyes. Supra-labral region roughened by numerous vertical rugae. Frontal region smooth. Ocelli in seven transverse, curving series. Antennae short, reaching but little beyond the collum. Cardo of mandibles in male strongly produced at the ventro-caudal angle. Stripes of gnatho-chilarium (male) at distal end with a large rounded thickening; proximally with numerous short spinules.

Collum strongly narrowed on each side, narrowest a little above lower end, the anterior corner being somewhat extended, narrowly rounded; the caudal corner also rounded; lower margin a little convex. Elevated border very broad about antero lateral corner. No sulci excepting the margining one on each side, the surface elsewhere being smooth and shining.

Transverse sulcus of segments very deep throughout, widely curving opposite the pore, which is well removed from it.

Anal valves densely finely punctate above; compressed mesally, the mesal border strongly elevated, but without definite margining furrow. Gauda short, acuminate, a little upcurled.

Number of segments fifty-five.

Width (male) 8.1 mm.

Locality.—India: Amballa.

Type, Mus. Comp. Zool. (No. 4856).

SPIROBOLOIDEA.

Trigoniulidæ.

Trigoniulus philippinus, sp. n.

Prozonites black dorsally, on the lower part of the sides passing into ferruginous, the covered zone throughout also of the lighter colour; metazonites above black in front, the caudal half ferruginous, the band of the latter colour widening down the sides. Anal scutum black, with a narrow ferruginous margin behind. Collum black, narrowly margined with ferruginous, the black area, like that of the other segments on the sides, embracing many dusky-ferruginous areas. Antennæ and legs flavous, in part of a dilute ferruginous cast.

Head smooth. Sulcus distinct across vertex, this part ending in a shallow depression between eyes, absent in frontal region but again distinct below. Eyes large, less than once and a half their diameter apart. Antennæ short, thickened distally.

Collum of usual form, excepting that the caudal margin just above the angle is more concave. Long, the anterior region protruding far forward. Margination as usual.

Segments furrowed or shallowly constricted along the position of the segmental suture, but the latter not evident as a sharply-defined sulcus. Below and up the sides to a short distance below the pores distinct, not crowded, longitudinal striæ, but these strictly confined to the metazonites, the striæ at the suture bending abruptly dorsad. The anterior prozonites covered densely with much finer wavy striæ, which are oblique and short, these in approaching the level of the pore becoming more nearly vertical, and dorsally replaced by deeper transverse striæ; in going caudad these fine striolations on the prozonites disappear, the dorsal ones first being replaced by short wavy marks and then quite disappearing. A series of small punctæ and impressed horseshoe-shaped markings along the sutures above. In the middle and posterior regions the zonites above, especially across the metazonites, raised into a number of low broad longitudinal rugæ.

Anal scutum covering the valves above; a depression on the caudal border each side of the median angle, the depression crossed by two or three short furrows. Anal valves margined, the margining sulci deep; smooth.

The anterior male gonopods of the usual general form.

The median piece with the distal plate large, nearly attaining distal ends of the inner prongs of the gonopods, much exceeding the proximal arms in length, moderately narrowing distad, well rounded at the end; the proximal branches small, curving about the bases of the gonopods to each ectal side.

Number of segments fifty-four.

Length (male) nearly 42 mm.; width 3.25 mm.

Locality.—Philippines: Los Baños (*C. F. Baker*).

Type, Mus. Comp. Zool. (No. 4787).

Trigoniulus melanotelus, sp. n.

This species resembles the widespread *T. lumbricinus* (Gerst.) in size and coloration, but is easily distinguished from that species in the character of the sculpturing of the segments. The general colour is brick-red, with the prozonites darker, producing an annulate appearance. Sometimes, however, the reddish colour may be almost lacking. The head, collum, and anal segment darker, blackish, the collum margined with reddish, the anal scutum paler along the free margin, and the head lighter laterally. Legs fulvous of a reddish cast.

The antennæ short. Eyes subtriangular, the caudal side convex, the others straight. Labial pores as usual.

Collum narrowed as usual, the lower end well rounded, not at all acute, the anterior and caudal margins above and below somewhat concave. Marginations as usual.

Segmental sulci fine, but distinct throughout, curved opposite pore. Segments not at all or only vaguely constricted. A salient characteristic in the sculpturing by which the species may at once be recognized is that each segment is densely, finely, longitudinally striate below the pore over both rings, as also for a way above it and across the dorsum as well as over the metazonite; the dorsal region of the prozonite free from longitudinal striæ, but densely marked with short curved impressed lines, much as in *lumbricinus*. The longitudinal striæ give a somewhat silky lustre, much as in certain species of *Dinematocricus* (*sericoides* and allies).

Anal scutum rounded behind, covering the valves; surface not striate, marked with impressed, branching, coriarius lines. Valves margined.

In this species the distal division of the median plate of the male gonopods is large and triangular, extending much distad of the end of the coxa, excepting that the mesal side

of the latter is produced caudad to about the same distance, or, rather, a little beyond. The arms of the piece above form a U-shaped figure, but the upper, *i. e.* dorsal or attached end of each arm, curves ectad about the base of the gonopod. The telopodite of the anterior gonopods terminates at the lower or free end in a short process from the mesal side, which at its tip bends ectad into a short arm at right angles to the basal part.

Number of segments fifty-three.

Diameter (female) 4 mm.

Locality.—Philippines: Luzon, Mt. Makiling (*C. F. Baker*).

Type, Mus. Comp. Zool. (No. 4780); paratypes (No. 4781).

Trigoniulus major, sp. n.

This species, in the lack of a male, referred to this genus with some doubt, resembles some specimens of *T. lumbricinus* in being of a brick-red colour, but the legs are flavous, not ferruginous. The caudal borders of segments a deeper red. Head and anal segments, especially the valves, lighter, more flavous.

Sulcus on head evident on vertex and below. Surface in general smooth. Eyes rather small, subcircular, widely separated. Antennæ short.

Whereas on the body of *lumbricinus* there is a deep, fine longitudinal sulcus across the plate at the level of the eye on each side, no such sulcus is evident in the present species; but below this level there are several wide and shallow longitudinal furrows, not extending to either border.

The segments in general a little constricted, a shallow depression encircling each segment along the suture, which is obscure and above not evident. Below and part-way up the side the usual longitudinal striæ across the metazonite. Striæ on prozonite below finer and more numerous than on the metazonite, those towards the pore in particular curving up cephalo-dorsad, all more or less branching; above pore across dorsum replaced by a meshwork of numerous small, curved, impressed lines, not mingled with punctæ. In furrow numerous punctæ as well as coarser curved impressions. Metazonites with some lines at edge of furrow, but otherwise essentially smooth above.

Anal scutum not wholly covering the valves above. Valves strongly compressed in the usual way.

Number of segments fifty-five.

Width (female) 6.5 mm.; length about 75 mm.

Locality.—Philippines: Luzon, Mt. Makiling (C. F. Baker).

Type, Mus. Comp. Zool. (No. 4814).

LITOSTROPHUS, gen. nov.

Posterior gonopods broadly in contact at median line; coxal division at right angles to the telopodite, very broad, disto-proximally broadest at middle line. Telopodite a broad plate as usual, curving disto-mesad; excavated below disto-mesal corner, the latter projecting as an acute angle, while below excavation is a rather long, slender, styliform process. The median plate of the anterior gonopods has a very characteristic form, the distal undivided division being narrow and long, equalling the coxal plate of the anterior gonopods in length; proximal angles produced, as usual, into slender arms, each of which curves against the base of the gonopod, but ends distinctly on the middle of the anterior side of the latter, where it joins or lies over the chitinous bar, which curves about to the caudal side of the gonopod, the outer lobe not projecting as a lobe into the mesal area between the arms. Coxal piece elongate, simply and symmetrically narrowed distad. The distal or posterior segment also a simple elongate symmetrically rounded and curving caudad distally.

Antennæ short and thick, the basal part of each lying in a deep excavation or groove below the eye. Labral sinus large, obtusely angular, occupied by two large rounded teeth, with an obsolete much smaller one on each side.

Collum of normal size, strongly narrowed down each side. Repugnatorial pores on the prozonites.

In the male there are prominent tarsal pads on all the legs, including the most posterior.

Anal scutum produced into a cauda considerably exceeding the valves.

Genotype, *L. segregatus*, sp. n.

Litostrophus segregatus, sp. n.

Because of long preservation and having been allowed to dry, the type does not show with certainty the original coloration. At present it is testaceous, with the posterior borders of the segments much darker.

Eyes subtriangular with the caudally placed base strongly convex, the sides straight, and the anterior angle or apex

truncate. Antennæ short and very thick, the widths of joints being comparable to their lengths. Surface of head strongly roughened with pittings and irregular corrugations; a broad median longitudinal ridge over the lower frontal and the clypeal region.

Collum margined below and up to level of eye in front. Median region of plate strongly roughened; the borders, especially the anterior one, smooth.

Segments closely striate beneath, the striae on the prozonites towards level of pore oblique. Pores near sutures.

Tarsal pads thick, over entire length of tarsus, projecting as a free lobe distally. Claws very long, each with a long spine above it and a pair of shorter ones below.

Anal valves strongly compressed above but nearly level below, the inner borders above thereby appearing strongly elevated. Cauda cylindrical, distally rounded, a little thicker dorso-ventrally toward end than at base.

Number of segments about fifty.

Width-(male) 6 mm.

Locality.—"Gulf of Siam" (*G. V. Fox*).

Type, Mus. Comp. Zool. (No. 4859).

PLOKAMOSTROPHUS, gen. nov.

Like *Trigoniulus* in having the tarsi of the anterior legs of the male with pads beneath. May be distinguished from that genus in having the coxal plates of the anterior gonopods short, not prolonged as in *Trigoniulus*, and much exceeded by the telopodite; the latter broad throughout, with a thickened mesal border rising a little further distad than the main plate, but nothing like the cornuate, curved, terminal prolongation of *Trigoniulus*. The anterior gonopods suggesting those of *Sympastrophus*, but a mesal branch of telopodite not separated as in that genus. Each arm of median plate embracing the base of the gonopod as in the latter genus; basal or outer lobe free at the mesal end as a short lobe. Ventral plate of posterior gonopods in form of an angle or curved arch with vertex distad, articulating with gonopod at each end.

Genotype, *P. mindanaonus*, sp. n.

Plokamostrophus mindanaonus, sp. n.

Appearing very dark, the prozonites being blackish, with the metazonites obscure ferruginous, a series of blacker areas about pores along each side. Legs obscure ferruginous.

Head smooth. * Sulcus not evident in vertigial and frontal regions, a short one present above labral edge. Eyes small, fully twice their diameter apart.

Collum of ordinary form.

The pores are a little distance removed from the sutures, the latter being straight opposite pores and distinct. Longitudinal striæ across metazonites below and up the side part-way to the pore, the striæ crossing the front of the suture but little, there oblique; the prozonites mostly smooth, excepting that on some anterior segments there are above short wavy striations and some longer transverse ones. A series of small curved marks and punctæ along suture above. Some weak longitudinal rugæ above.

Anal scutum equalling the valves, without special markings. Valves margined, the elevated mesal rim low and narrow, though sharply set off.

Median plate of anterior gonopods with distal part triangular, acutely pointed, each side convex proximally and somewhat concave distally; proximal arms widely diverging, curving out about bases of gonopods. Coxal plates of first gonopods rising distad to an angle on mesal side; much exceeded by the telepodite, which is broad across distal end, with the thickened mesal ridge extending distad but little beyond the principal part.

Number of segments fifty-three.

Width (male) 2.5 mm.

Locality.—Philippines: Mindanao, Butuan (C. F. Baker).
Type, Mus. Comp. Zool. (No. 4788).

Plokamostrophus luzonius, sp. n.

Greatly exceeding the preceding species, *mindanaonus*, in size, and differing conspicuously in the details of the gonopods.

General colour black, the caudal edges of segments reddish and the covered part of prozonites light brown to fulvous. Lower part of face, antennæ, and legs ferruginous.

Sulcus of head distinct above and below. Eyes subtriangular, the meso-ventral edge convex, the caudal and the antero-ectal sides straight, the outer angle rounded. Foveolæ 2+2.

Collum nearly of same form as in *T. lumbricinus*, with a longitudinal stria similarly at level of eye.

Segments constricted moderately along position of suture. Suture not present dorsally. Striæ across metazonite below

and only about half-way up to the pore. Striation of prozonite very fine and often in part obscure, oblique as usual, none found above level of pore. Both prozonite and metazonite dorsally wholly smooth, without markings.

Compression of anal valves exceptionally strong, the mesal borders being strongly elevated. Anal seutum not quite wholly covering the valves.

Anterior legs of male, excepting the first two pairs, with the usual tarsal pads.

Median plate of gonopods shaped something like the wish-bone of a chicken, with the upper ends of the arms curving outwards about the bases of the gonopods as usual; the distal plate shorter than the arms, broadly triangular, the distal end rounded. The disto-mesal angle of coxal piece of anterior gonopods extending well beyond the coxa, broad distally, the mesal half rising above the cetal, with the cetal corner angularly produced and its distal edge convex.

Number of segments sixty and about that number.

Width of male, 7.2 mm.; of female, to 9 mm.

Locality.—Philippines: Luzon, Mt. Makiling (*C. F. Baker*).

Type, Mus. Comp. Zool. (No. 4815); paratypes (No. 4816).

Plokamostrophus guamanus, sp. n.

In this species the median plate of the posterior gonopods is in the form of a crescentic arch. The median plate of the anterior gonopods is in general form like that of *mindanaonus*, but extends a shorter way distad, has the distal end more rounded, and the upper arms shorter and even more strongly divergent than in that species. The coxal plate of the anterior gonopods is longer, and is characterized by having the disto-mesal corner rounded, not elevated into an acute process. The distal or caudal division differs in being exceeded by the coxal plate, excepting the meso-distal process, which extends beyond the plate—this process narrow as in *mindanaonus*, but longer.

Prozonites and anterior part of metazonites black, the remaining part of the metazonites ferruginous or in part fulvous. Collum bordered all around with light, and the median part including many light spots. Head below level of eyes and laterally fulvous. Legs and antennæ fulvous.

Segmental sutures mostly obsolete or absent. Surface for the most part characteristically densely finely granular or shagreened, smoother on posterior part of segments.

Number of segments about forty-seven.

Locality.—Guam Isld. (Owston Coll.), 1895 (No. 5984).

Type, Mus. Comp. Zool. (No. 4851).

Spirostrophus socius, sp. n.

This species resembles in general appearance and colour-markings specimens of *T. melanotelus*, in which the red colour is not developed. The two species were taken together on Mt. Makiling in the Philippines. The present species may be distinguished easily in lacking the dense striation characteristic of *melanotelus*.

The body is fulvous to ferruginous below and in a band encircling each metazonite, while the prozonites are black, the dark annuli disappearing in the light colour ventrally; collum black, narrowly bordered with ferruginous; anal segment black, the scutum narrowly bordered behind with ferruginous. Legs and antennæ fulvous to light brown.

Antennæ short, thickened distad. Eyes somewhat triangular, with the caudal or upper side strongly convex, the mesal and outer sides straight, and the anterior angle rounded. Surface smooth; sulcus widely interrupted in the frontal region. Foveolæ as usual.

The collum narrowed as usual. Infero-anterior corner rounded, the infero-caudal angle subrectangular.

Position of sulcus made clear dorsally by a series of horse-shoe-shaped impressions just in front of it; curved opposite the pore. Above the pore level; the surface smooth, excepting for the impressions mentioned and a few weak striæ across the metazonite. Below the pore the metazonite crossed by longitudinal striæ as usual, with some short curved striæ immediately below the pore level just in front of the sulcus, but further ventrad these quite absent. Prozonite often showing numerous fine, short, wavy, mostly vertical striæ over its anterior part.

Anal scutum just equalling the valves. The latter strongly margined.

In the gonopods of the male the median piece has the middle or distal plate long and broad, much less trapeziform than in *S. navesi*, the genotype; its distal end also is rounded, not truncate, and is mesally slightly notched. The proximal arms of the middle piece form a more U-shaped figure, with their ends flaring out ectad about the bases of the gonopods in the usual way; the mesal process formed by the free part of the outer branch runs directly distad to come in contact with the edge of the arch, not diverging

into the median cavity as in *naresi*. The general form of the parts of the anterior gonopods as in *naresi*. Description of posterior gonopods deferred until illustrations are prepared.

Number of segments fifty-two or fifty-three.

Length (female) 50 mm.; width 3.6 mm.

Locality.—Philippines: Luzon, Mt. Makiling (C. F. Baker).

Type, Mus. Comp. Zool. (No. 4782); paratypes (No. 4781).

Spirostrophus javanus, sp. n.

In the structure of the gonopods similar in general to *S. naresi*, but differing in numerous minor details. The anterior median plate is larger, with the upper arms less strongly divergent and shorter relatively to the distal undivided plate; the latter is distally similarly truncate or very gently convex, but the sides are less divergent and more evenly convex towards the arms; the free mesal end of outer lobe of arms projecting more directly distad, close to mesal edges of arms. The anterior or basal division of the anterior gonopods is of more nearly uniform width, the distal end being broader and the lower middle part narrower.

The general colour black. Each metazonite above is bordered caudally with ferruginous, the ferruginous stripe widening down the side and below, embracing the entire metazonite, the black of the prozonite becoming lighter at the same time from the inclusion of light dots. Legs and antennæ fulvous to pale ferruginous.

Antennæ short, a little clavate. Eyes trapeziform, with the base caudad and convex, less than twice their diameter apart. Surface of head smooth and shining. Suleus widely interrupted in the frontal region as usual.

Collum strongly narrowed below on each side as usual; but the lateral edge straight, not rounded, the caudo-lateral angle rectangular, the antero-lateral obtuse but not rounded, or but little so.

Segments with no distinct median transverse suture, the position of the latter occupied by a weak furrow, along which above, in the typical segments, is a series of sharply impressed circular and horseshoe-shaped marks, which continue also in a series for some distance below the pore. On the metazonite above are sparse and very small semicircular or crescentic impressed lines. The metazonite crossed below by the usual striæ, wholly smooth above. In the anterior segments the prozonites below the pore marked

with numerous oblique curved fine impressed striolations, some of which in the first segments cross the dorsum as deeper continuous striæ; but in the succeeding segments these lines break up into shorter curved lines, finally becoming reduced to the sparse very small marks previously mentioned.

Anal scutum equalling the valves, rounded. Valves strongly margined.

Number of segments fifty.

Length (female) 37 mm.; width 3.25 mm.

Locality.—Java: Buitenzorg (*T. Barbour*).

Type, Mus. Comp. Zool. (No. 4844); paratypes (No. 4845).

Rhinocricidæ.

Dinematocricus plenocinctus, sp. n.

Colour olive-black, with metazonites, excepting its anterior portion dorsally, covered with an encircling flavous band. Collum narrowly bordered with flavous all around. Anal segment solid black, excepting a narrow caudal border of flavous or ferruginous to the anal scutum. Antennæ and legs flavous.

The species is most easily distinguished, in connection with coloration, by having the scobina extend to near the thirty-second somite, with most in part exposed, the caudal margin of the preceding tergite over those of each segment being slightly sinuate as in *undulatus*, etc., but more lightly. The sutures are distinct excepting in the mid-dorsal region; each fine, strongly bent in a semicircle about the pore on each side. Segments smooth above; striate beneath in the usual manner.

Anal segment long. Scutum exceeded by the valves. The latter only weakly compressed.

Number of segments fifty-two.

Width (female) 4.2 mm.

Locality.—Java: Buitenzorg (*T. Barbour*).

Type, Mus. Comp. Zool. (No. 4855).

Pachyolidæ.

Trachelomegalus modestior, sp. n.

Distinguished in coloration from *hoplurus* in having collum black excepting a narrow red border, and the anal tergite also black excepting a narrow caudal border, and the cauda,

which are red instead of being wholly blood-red; the metazonites a duller red, the red annuli narrower, in part so dull as scarcely to differ from the anterior region; and especially in having a median dorsal row of fulvous to red spots; one spot on the anterior part of each segment. Legs ferruginous.

The two species differ obviously in the cauda, this in *hoplurus* being much longer and stouter.

The segmental suture more strongly curved about the pore than in the other species, in which the suture, in fact, is scarcely at all bowed.

In the gonopods of the male the proximal branches are much more strongly divergent and the median distal plate proportionately shorter. Injury to the gonopods prevents complete determination of structure. The telopodites of anterior pair curve strongly caudad beyond the segment.

Number of segments forty-seven.

Width (male) 6.2 mm.; female 7.5 mm.

Locality.—Borneo: Sarawak, Ladong (*H. W. Smith*).

Type, Mus. Comp. Zool. (No. 4810); paratypes (No. 4811).

POLYDESMOIDEA.

Strongylosomidæ.

Strongylosoma philippina, sp. n.

Shining black above, with a mid-dorsal series of bright ferruginous spots, or these obscure or absent in the female. Lateral edges of porigerous carinæ also often ferruginous. Legs yellow. Antennæ deep brown or black. Venter fulvous or fulvo-ferruginous.

Sulcus across vertex extending very nearly to upper edges of antennal sockets, very deep. Surface of head smooth and shining. A few long setæ along sulcus above, and with more numerous shorter ones along clypeal and labral areas. Antennæ long and slender, the articles from second to sixth very long.

Collum narrowly margined, smooth and shining; antero-lateral corner more angular than the caudo-lateral, which is widely rounded.

Segments in general deeply constricted, the furrow between the divisions strongly beaded. Surface smooth and shining, glabrous. Keels of second segment well below level of adjacent ones, extending forward beneath the first. Keels on other segments indicated by a deep longitudinal sulcus beneath, which is a low ridge-like swelling, thinner on the

non-porigerous segments but thick on the others. Metazonites from the fourth to the eighteenth with a transverse sulcus, but none with a longitudinal sulcus.

Cauda extending well beyond valves, slightly depressed, distally truncate. Anal valves mesally narrowly but sharply margined.

In the male the process of fifth sternite thick, subcylindrical, with distal surface oblique and its anterior edge mesally weakly emarginate or notched. Primary division of telopodite of gonopod beginning near or proximad of beginning of length; the seminiferous and other division twisted about each other and the latter distally bifurcate, the branches slender blades curving beneath the end of the seminiferous division.

Length of males to about 19 mm.; width 1.55 mm. The females much stouter, up to 2.5 mm. in width.

Localities.—Philippines: Mt. Makiling, Mindanao, Butuan (C. F. Baker).

Type, Mus. Comp. Zool. (Nos. 4651); paratypes (Nos. 4652 & 4653).

Prionopeltis kathanus, sp. n.

Above deep chocolate-brown to black, shining; the keels yellow. Lower part of sides and venter more brownish, sometimes of a slight reddish tinge. Legs and antennæ brown.

Antennæ slender, of moderate length. Head smooth and shining; a few setæ below level of antennæ; vertigial sulcus sharply impressed down to level of antennal sockets.

Dorsum strongly arched, the keels depressed so as to continue nearly the same curvature. Transverse sulci distinct from the fifth segment, caudad. Posterior corners of all keels angular, those from second caudad, more and more acute than a right angle, but the processes of eighteenth plate narrowly rounded, while the keels of the nineteenth are greatly reduced. All keels strongly margined; the porigerous ones much more thickened than the others. Surface appearing smooth and shining, but under lens seen to be coriariously finely roughened. Pleural keels below on anterior segments; these low, not produced.

Cauda slender. Valves with mesal margins set off by a sulcus and strongly elevated. Anal sternite triangular; the anterior side convex, each lateral one more weakly so; a transverse sulcus behind anterior border; the setigerous tubercles considerably removed from the caudal margin.

Sternites glabrous; without processes in general, but the fifth sternite in the male with two low, broad, mesally confluent elevations.

In the gonopods of the male the second joint mesally strongly setose; produced caudad into a distally rounded spur. Telopodite broad; distally with a dorso-ectal blade concave on mesal side, distally margined to an acute angle and curved mesad, and arising from ventral edge of base of this a style which is slender and acute at tip; along basal part with a thin blade-like marginal extension, and at base a short acute process extending meso-ventrad. Coxal hook long and slender.

Length (male) 32 mm.; width 4.2 mm.

Locality.—Upper Burma: Katha (*T. Barbour*).

Type, Mus. Comp. Zool. (No. 4860); paratypes (No. 4681).

Prionopellis montanus, sp. n.

Deep chocolate to black in colour, the keels bright yellow to orange. Legs brown. Antennæ blackish like the tergites.

Antennæ slender, not elevate. A distinct vestigial sulcus present, this bifurcating below and sending a branch to the edge of each antennal socket.

Anterior margin of collum evenly convex between the lateral angles. Caudal margin straight except at ends, where the angles of the keels are very slightly produced.

In other tergites the angles of the keels are strongly produced caudad. The lateral borders of the keels strongly thickened and elevated. In the female a single small acute lateral tooth on each keel, this usually obscure or absent in the male. All tergites from fifth to eighteenth inclusive with a deep transverse sulcus. Tergites showing also a much finer median longitudinal line at right angles to the transverse sulcus. The surface of the tergites between keels coriariously more or less roughened; over and adjacent to the bases of the keels the surface weakly tubercular, the tubercles being low and closely crowded.

Anal scutum transversely depressed near caudal end of anterior fourth of length. Cauda moderately wide, hollowed out beneath, with a prominent tubercle on each side of the caudal end. Anal valves strongly margined. Anal scale convexly rounded caudally; the two tubercles very large.

In the telopodite of the male gonopods the two distal branches are slender and finely acute, each towards its distal end bending directly mesad, and one curving about and

closely applied to the other proximad of the distal bend. Each telopodite as a whole bowed ectad, bending in distally to median line.

Length (female) to about 40 mm. ; width to 4.8 mm.

Localities.—Philippines : Luzon, Mt. Makiling ; Las Baños.

Type, Mns. Comp. Zool. (No. 4663) ; paratypes (Nos. 4664 & 4665).

Platyrrhacidae.

Platyrrhacus simplex, sp. n.

Keels brown, with the dorsum between them black ; pronotites above blackish across their caudal region, in front and laterally brown, fulvous beneath. Anal scutum brown, excepting at base, where black. Head brown. Legs and antennæ light brown or fulvous.

Antennæ short. Head about antennal sockets and over entire region above them finely tuberculate or granular, the granules not crowded. Vertigial furrow present, this widest and deepest at lower end.

Collum as wide as head, inclusive of mandibles. Widest a little in front of middle, the lateral margin on front side of the lateral angle convex, that behind concave. Depressed caudad of anterior border, the latter bearing a transverse row of large tubercles. A row of tubercles also along caudal border. The surface in general densely granular, with some larger scattered tubercles which are scarcely serrate.

Second tergite obviously wider than the adjacent ones, the keels extending out beyond and below the others. Lateral end narrow, rounded, the margin wavy, showing three low crenations between those at the corners. The lateral margin of third keel also with three undulations, that of fourth one and that of immediately following ones with two more or less clearly discernible. In the posterior region the crenulations become more elevated and distinct, and may rise to four or five in number. Anterior side of keels angularly shouldered at proximal end ; edge straight or slightly concave, weakly serrate, the border crossed by numerous longitudinal sulci. Caudal margin of keels straight or slightly concave, also obscurely toothed, the outer corner slightly extended caudad. Dorsal surface of tergites strongly granular out to the edges of the keels, with three rows of tubercles, of which the caudal row is distinct at the sides, but is across the mid-dorsal region obscure or obliterated, while the other rows are distinct entirely across.

Anal scutum with sides parallel, caudally semicircularly rounded, crenate; dorsal surface granular proximally. Valves nearly flat; mesal border elevated but not sharply set off. Scale subtrapeziform, the caudal margin slightly convex between the tubercles. Sternites each with four low processes, one at base of each leg.

Male gonopods beyond coxa broad, becoming flattened distad, narrowing and then uncate, expanding into a thin blade, which bifurcates distad into two acute short processes.

Length (male) about 32 mm.; width 6 mm.

Locality.—Borneo: Sarawak, Ladoug (*H. W. Smith*).

Type, Mus. Comp. Zool. (No. 4686).

Platyrrhacus lamprus, sp. n.

This resembles in coloration the other two species of the group (*Haplarachia*, Poc.) known from Borneo, *H. everetti* and *H. hosci* of Pocock, but the yellow of the keels extends further mesad and much beyond the pore. The dorsum elsewhere is a coffee-brown. Legs flavous or distally light brown.

Head densely granular above; the region below antennæ shagreened. Vertigial furrow deep.

Collum widest in front of middle. Anterior margin straight in middle region, curving caudo-ectad at the ends. Surface in general densely granular; the tubercles behind anterior border small; caudal border elevated and bearing a series of exceptionally large subconical tubercles.

The tubercles of the caudal row on the second plate also very large, the corresponding ones of other plates becoming smaller. The tubercles of the other two rows much smaller and more inconspicuous. Surface densely granular to or a little beyond base of keels, the surface of the latter being most weakly uneven. Pores much closer to margin than in either of the two other species mentioned, even in the anterior region being rather less than once and a half the diameter (inclusive of rim) from the margin and in the posterior region, but the diameter from the margin. Lateral margin of keels smooth, narrowly raised. Anterior margin somewhat raised or thickened, the tubercles projecting so as to produce fine serration; caudal margin as a whole running a little caudad of mesad, slightly concave, finely serrate, with a larger tooth at ectal angle and a larger rounded prominence at mesal end, this neither triangular or tooth-like.

Caudal scutum somewhat widest distally. Caudal end with three prominent processes, a broad triangular median

one and on each side of this a narrower and more acute process.

The sternal processes erect, long, and acute.

Gonopods of male nearly as in *H. hosci* (Poc.).

Length (male) about 70 mm. ; width 11.5 mm.

Locality.—Borneo (*H. W. Smith*).

Type, Mus. Comp. Zool. (No. 4673).

Platyrrhacus attenuator, sp. n.

This species resembles *P. vittatus* (Poc.) in having a continuous median longitudinal pale stripe along the dorsum ; but the general colour is darker, chocolate to brownish black, and the keels at their borders are paler, like the median stripe ; prozonites darker, more blackish. The median pale stripe may be distinct only on the prozonites.

The species is characterized also in having the body (inclusive of the keels) widest at the third or fourth segment, from where it narrows gradually but continuously to the caudal end. Prozonites densely, finely, and evenly shagreened. Metazonites densely granular ; the tubercles of the transverse rows small, those of the caudal row the most distinct. Collum much wider than head. Head densely granular. Vertigial furrow deep. Across lower part of clypeus an upper transverse row of four and a lower row of six, and just above labral margin a row of more numerous and smaller brushes or pencils of setæ, each group arising from a foveola. The anterior edge of the collum is mesally straight, at the ends very slightly produced forward. Behind the anterior row of tubercles a deep transverse furrow widening and deepening at each end into a pit-like depression. Anterior portion of lateral margin crenate, with three rounded crenations inclusive of the one at the angle.

The anterior edge of the keels of the second segment is also turned up, while the keel just behind it shows a wide pit-like depression. The lateral margin of the first five keels is laterally wavy ; on succeeding keels the elevations become more and more pronounced and tooth-like ; the teeth in the posterior region large, triangular, mostly three in number exclusive of those at the angles, but the number on the fifteenth and sixteenth plates is four or five and on the seventeenth and eighteenth five or six. Anterior and posterior edges wholly smooth. Posterior angles not produced into spiniform processes, though the nineteenth keels are bent back markedly and are rounded at the caudal ends. Anterior pore areas twice their diameter from the

margin, the posterior ones about their diameter from the nearest emargination.

The anal scutum is clavately widened caudad; the caudal margin is slightly convex, with the margin wavy, there being six crenations with a seta borne on each.

Sternites each bearing four conical acute processes, one mesad of the base of each leg.

Length to about 110 mm.; width to nearly 18 mm.

Locality.—Borneo; Sarawak, Ladong (*H. W. Smith*).

Type, Mus. Comp. Zool. (No. 4671); paratype (No. 4672).

Platyrrhacus philippinorum, sp. n.

Black; the keels entirely bright yellow. Legs and antennæ brown.

Head above coarsely granular, in front and below more finely granular, with a few hairs in clypeal region; vertigial sulcus deep. Antennæ short and thick.

Collum wider than head, flat, dorsal surface densely granular; a little distance back of the anterior margin a transverse row of larger smooth tubercles.

In the succeeding tergites the keels are raised a little so as to make an angle with the adjacent surface of the dorsum rather than continuing this outline smoothly. The lateral margins of the keels are simply wavy, in no case serrate or dentate; anterior and posterior margins appear finely toothed from the presence of granules on each. Pores removed from the lateral margin by a distance equal to the circular area enclosing the pore. Dorsal surface in general densely granular; a series of larger granules or tubercles, well separated from each other, along caudal border, a second series of somewhat smaller ones across middle, and a third one towards the anterior border of metazonite.

In the male gonopods the telopodite curves meso-distad beyond the median line, the principal or ventral branch then bending ectad and then back caudad, the slender acute tip then running first again mesad and the extreme distal end bending next forward. The dorsal branch is a comparatively short-pointed blade curving dorso-mesad and ending at or near the middle line.

Length (male) about 65 mm.; width 10 mm.

Locality.—Philippines: Luzon, Mt. Makiling (*C. F. Baker*).

Type, Mus. Comp. Zool. (No. 4666); paratype (No. 4667).

CHILOPHUS, gen. nov.

Differentiated from *Platyrrhacus* and allied forms in character of keels and sculpturing. The keels are all large and horizontal, with margins wholly even and smooth, and strongly though narrowly margined in front and behind as well as laterally. On each keel from the first to the nineteenth inclusive there is a thick strongly elevated longitudinal ridge mesad from and parallel with the lateral margin. The pores dorsal, well removed from margin, lying in the ectal face of the ridge. The dorsal surface not granular, in the type evenly finely shagreened over prozonite and metazonite; each metazonite with three transverse rows of large tubercular areas, the most anterior of which is a little in front of the middle. Sternites without processes. Hairs of clypeal region not forming pencils or fascicles. Antennæ slender, not clavate.

Genotype, *C. solus*, sp. n.

Chilophus solus, sp. n.

Resembling in general form the Sumatran *P. laticollis*. It is a more lightly coloured species, being brown, with the keels yellow instead of piceous or black.

Vertigial sulcus deeply impressed down to level of antennæ. Head densely finely shagreened, with traces of coarser granulation above. Antennæ reaching to fifth segment.

As in *P. laticollis*, the collum is much wider than the head. It is nearly three times wider than long instead of only twice, as it is in *laticollis*. The anterior margin is mesally slightly convex, then on each side a little incurved and laterally again slightly convex. Caudal margin arcuate, widest near or slightly caudad of middle; finely margined anteriorly and laterally, and with a prominent longitudinal ridge or elevation mesad of each lateral border. Surface densely finely shagreened, but not granular. Along caudal border a row of large but in part obscure tubercles.

Second and third keels bent forward a little; other keels straight. The margining of the caudal border of the keels extends entirely across the tergite on most somites, though in the median region weaker. Tubercles large, rounded, those of most anterior row weaker and more widely separated. Keels depressed mesad of the border ridge, and there densely finely shagreened. The ridge curves conspicuously mesad about each pore. Pores removed by more than the diameter of the ring from the margin.

Anal scutum strongly narrowed caudad, caudally convex, with a median incision leaving a rounded lobe on each side, just cephalad of which on each lateral margin are two large setigerous tubercles. Anal valves with mesal borders strongly elevated and margined. The anal scale is caudally acute, on each side of the caudal apex a long stout subcylindrical tubercle exceeding the tip of the median region.

The telopodites of the gonopods of the type are broken off and lost.

Length about 70 mm. ; width 11·6 mm.

Locality.—Zanzibar (*Dr. C. Pickering*).

Type, Mus. Comp. Zool. (No. 4674).

VI.—*New and little-known Species of Ants from various Localities.* By W. C. CRAWLEY, B.A.

Subfamily I. *PONERINÆ*, Lep.

Myrmecia rufonigra, sp. n.

♂ major. Length (without mandibles) 11 mm. ; length of mandibles 2·0 mm.

Black ; mandibles dark red-brown, apical two or three joints of funiculus dark red, the rest of antennæ, the legs, mesonotum, epinotum, and petiole red. The mesonotum has a dark patch on each side and the postpetiole has a dark band round its base, projecting on the upper surface into a conical patch extending nearly halfway across the node.

Antennæ without hairs, legs with abundant fine exserted hairs ; the whole of body with similar grey pilosity, which is longer on the clypeus and mandibles. Gaster, second node, and legs with a fine grey pubescence.

Mandibles as long as head, with four large teeth besides the apical tooth, and smaller teeth between. External border feebly concave. Head slightly broader than long, narrower at occipital border, which is straight, not so broad in front proportionately as in *pilosula* ; clypeus widely emarginate. Second joint of funiculus nearly twice as long as the first, the remaining joints decreasing gradually till the apical. The scapes do not quite reach the occipital border. Shoulders of pronotum evenly rounded ; meso-epinotal suture distinct ; epinotum presenting an even curve, barely showing a base and a declivity. First node from above nearly circular, the